

ERIOPHYID STUDIES C - 4

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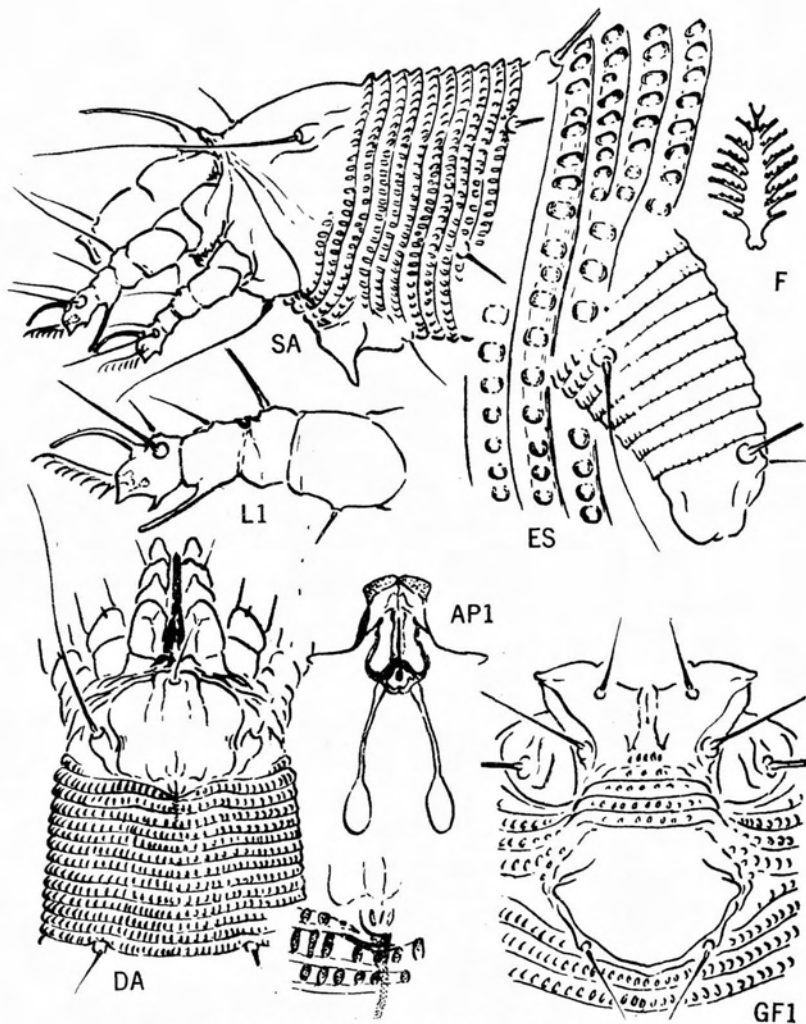


Plate 1 - *Trisetacus sequoiae*, new species

Trisetacus sequoiae, new species

Plate 1

This is an 8-rayed featherclaw species of the genus, with a rear central depression on the shield and a slight gland extending back from it. From *Trisetacus pseudotsugae* K., which also has an 8-rayed featherclaw it differs by having microtubercles that are either flat or rounded off. The microtubercles on *pseudotsugae* are pointed.

Female 205 μ -225 μ long, about 52 μ thick; elongate wormlike; color light yellowish-white. Rostrum 27 μ long, projecting ahead and down; antapical rostral seta 10 μ long. Shield 26 μ long, 40 μ wide, subsemicircular in anterior outline and slightly compressed. Central area of shield lacking definite marks; a curved line, arching out from anterior center, recurving back in front of dorsal tubercle, running just inside dorsal tubercle position, and ending on rear margin where it curves toward center. Shield laterally with some slight longitudinal lines. An indentation in center of shield on rear margin and backward extending gland. Anterior median shield seta 4 μ long. Dorsal tubercles 26 μ apart, ahead of rear margin; dorsal setae 45 μ -50 μ long, projecting divergently ahead. Foreleg 26 μ long; tibia 5 μ long, with 6 μ seta from 1/2; tarsus 6 μ long; claw 8 μ long; featherclaw 8-rayed. Hindleg 22 μ long, tibia 5 μ long, tarsus 7 μ long, claw 10 μ long. Coxae with some lines, anterior coxae slightly separated; first setiferous coxal tubercles closer to each other than second, about opposite anterior coxal approximation; second coxal tubercles not far ahead of transverse line across third tubercles. Thanosome with about 40 rings, completely microtuberculate; microtubercles flattened or rounded off, not quite reaching ring margins on well expanded examples, more elongate dorsally, rounder ventrally; dorsally reduced to fine beads on margins on about last 6 rings. Subdorsal seta 10 μ long, on ring 11 behind shield; lateral seta 22 μ long, on ring 7; first ventral seta 28 μ long, on ring 16; second ventral 15 μ long, on ring 28. Telosome with 7 rings, microtubercles fine, on margins, elongate ventrally; seta 40 μ long. Accessory seta 12 μ -14 μ long. Female genitalia 17 μ long, 26 μ wide, unmarked coverflap; seta 12 μ long.

Male 180 μ long, 45 μ thick; genital seta 8 μ long.

First nymph lacking microtubercles, 4-rayed featherclaw; second thanosomal ring not running across dorsum to rear of shield; slight gland on shield center rear; about 9 rings between rear coxae and genital tubercles.

Second nymph with sparse and unevenly clustered microtubercles; gland at center rear on shield; featherclaw 6-rayed.

Type locality: Big Sur, Monterey County, California

Collected: September 24, 1969, by the writer

Host: *Sequoia sempervirens* (D. Don) (Taxodiaceae) coast redwood

Relation to host: the mites damage buds, causing browning under bud scales, principally on lateral buds along a shoot, and preventing further growth.

Type material: a type slide, so designated, with the above data
three paratype slides with the above data
four paratype slides from redwood, taken at Riverside, Cal.
on Mar. 6, 1969, by L. Farmer
a paratype slide sent to the Entomology Research Div., USDA,
Beltsville, Maryland

Acalitus adoratus, new species

Plate 2

This new species, which makes small erineum tufts on the undersides of leaves of *Eupatorium adoratum* L., has shield ornamentation of many fine longitudinal lines that nearly obscure the primary longitudinal lines. It differs from *Acalitus inulaefolii* not only by having these numerous lines on the shield but also by having more linear microtubercles on the abdominal rings, and by having a diagonal line across the female genital coverflap subparallel to rear margin.

Female 140 μ -180 μ long, 35 μ -40 μ thick; wormlike; color light yellowish-white. Rostrum 15 μ long, gently curved down; antapical seta apparently absent. Shield 23 μ long, 29 μ wide, somewhat acuminate in anterior outline from above. Shield surface covered with numerous fine lines, the median, admedian and submedian lines almost entirely obscured. Laterally the shield with wide band of granules above coxae; 3 or 4 partial rings below dorsal tubercles. Dorsal setae 18 μ long, arising from tubercles 15 μ apart. Foreleg 21 μ long, tibia 4 μ long, tarsus 6 μ -7 μ long, claw 5.5 μ long. Hindleg 19 μ long, tibia 2.5 μ long, tarsus 5 μ long, claw 6.5 μ long. Coxae generally granular; forecoxae almost entirely fused across midline, the rear coxae somewhat separate; setiferous coxal tubercles in a straight anterior converging line, first tubercle near anterior margin of forecoxae. Thanosome with about 66 rings, and some ventrad ring reduction. Dorsal and lateral microtubercles somewhat narrow and elongate, slightly pointed as they touch ring margins; on lower sides and ventrally the microtubercles more bead-like, slightly pointed. Lateral seta 15 μ long, on ring 10 behind shield; first ventral seta 32 μ long, on ring 25; second ventral 10 μ long, on ring 43. Telosome with 4-5 rings, the microtubercles thin and pointed over ring margins; telosomal seta 65 μ long. Accessory seta absent. Female genitalia 23 μ long, 16 μ wide; coverflap with coarse granules basally and centrally and a cross line subparallel to rear flap margin; seta 4 μ long. Male about 144 μ long.

Second nymph with about 6 cross rings ahead of genital setae.

Type locality: five miles from Ariara, Trinidad, West Indies

Collected: April 3, 1970, by Rachel Crutwell

Host: *Eupatorium adoratum* L. (Compositae) a Eupatory

Relation to host: the mites make small erineum tufts on the undersides of the leaves.

Type material: a type slide, so designated, with the above data
two paratype slides, one sent to the Entomology Research Div.
USDA, Beltsville, Maryland
an envelope of dry leaves and erineum tufts on them from
which the above specimens referred to were taken.

Acalitus brevitarsus (Focke), 1890, Rev. biol Nord France 3:3

This Eriophyid makes undersurface erineum patches on alder leaves, typically on *Alnus glutinosa* Gert. in Europe. Examples of this erineum, with included mites, are on hand from the type host in Germany, from *Alnus* sp. in Turkey, from *Alnus rugosa* (Du Roi) in Michigan, and from *Alnus rhombifolia* Nutt. in California. This erineum ranges in color from bright orange, through yellow, to off-white. Examination of the construction of this erineum shows that European specimens consist of capitate hairs, the Turkey variety being what could be called compound-capitate hairs. Such North American erineum as is available is not constructed of capitate hairs, however, but of tangled elongate filaments. But examination of the included mites shows no essential difference between European specimens and North American examples. The mite species is deuterogynous and this should not be considered as indicating specific difference. Males have fine, rather close-set elongate microtubercles, the ventral ones being shorter and with slight point over ring margins. Protogynes are similar to males in regard to ring granules, but deutogynes have more sparse microtubercles. On deutogynes the dorsal ring granules, or microtubercles are rounder and on slide mounted specimens are lighter in color. Ventral deutogyne microtubercles are more rounded off or slightly pointed, but unlike on protogynes these ring granules tend to be ahead of ring margins. The examples from Turkey were collected by Dr. H. K. Wagnon, Cal. Dept. Agr.; the Michigan mites were collected by Dr. C. C. Hall, Univ. of Texas; the California alder specimens were collected by Iris Savage, Cal. Dept. Agr.

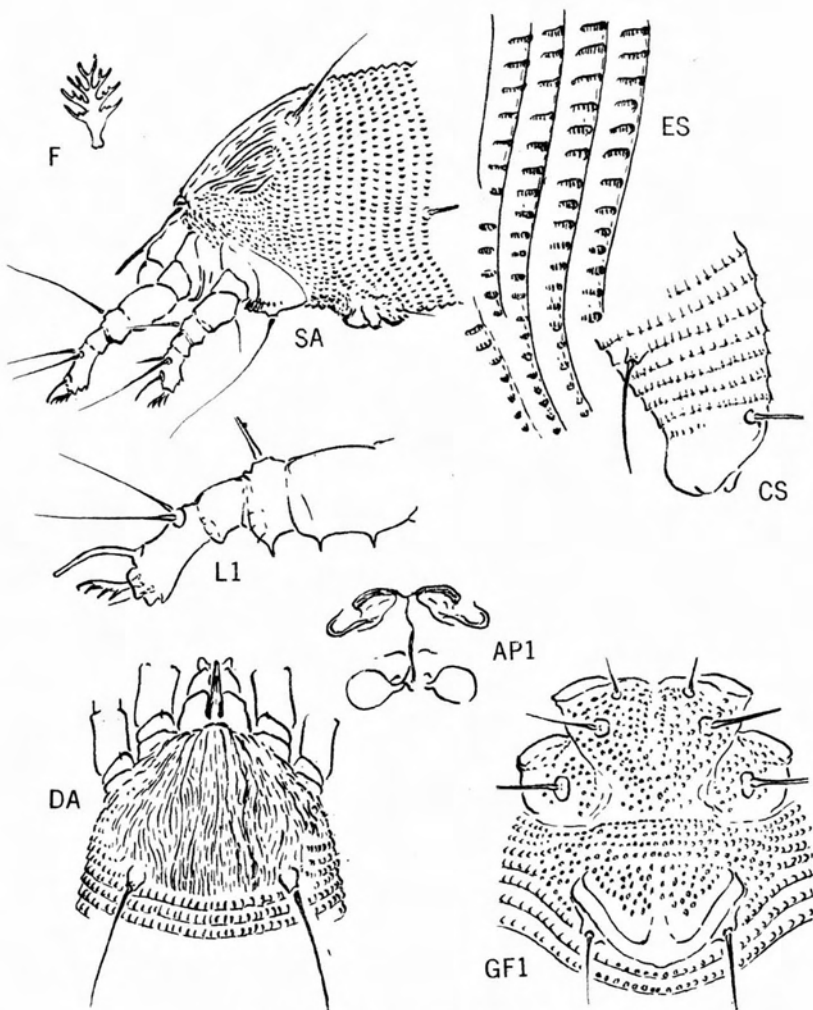


Plate 2 - *Acalitus adoratus*, new species

Acalitus gilae, new species

Plate 3

The characteristics of *gilae* are: strong central longitudinal shield lines, sides of shield entirely granulate, 5 to 6-rayed featherclaw, female genital coverflap with about 10 irregular short longitudinal ribs. *Acalitus vaccinii* (K.) has a 6-rayed featherclaw, but weak shield lines. The *Eupatorium* spp. of *Acalitus*, described in this paper, have 4-rayed featherclaws.

Female wormlike in shape, 145µ-160µ long, about 34µ thick, color in life probably light yellowish-white. Rostrum 16µ-18µ long, projecting anteriorly and down; antapical seta apparently absent. Shield 24µ long, 30µ wide; design of central lines, laterally granular. Median line fairly complete, ending in a few granulations; admedians complete, gently sinuate, outcurved at rear; submedian lines with first short, reaching back to about anterior third; second submedian complete, ending just inside position of dorsal tubercle; third submedian about as short as first. A partial line from upper granules at 1/3 and ending ahead of dorsal tubercle. Broad triangular area from front angle of shield, bounded on rear by dorsal tubercles above and hind coxae below, followed by two or three partial rings. Dorsal tubercles 20µ apart, on rear margin; dorsal setae 25µ long, projecting divergently to rear. Anterior coxae broadly fused, set with coarse granules, notably broad granular area between hind coxae; first coxal setae short, arising from tubercles slightly ahead of obscure central coxal point; second setiferous coxal tubercles well ahead of third tubercles. Forelegs 22µ long; tibia 3-1/2µ long; tarsus 7µ long; claw 7µ long, downcurved; featherclaw 5 to 6-rayed. Second legs 19µ long, tibia 3µ long, tarsus 6µ long, claw 9µ long and rather straight. Abdominal thansome with about 63 rings which are entirely microtuberculate; microtubercles basally rounded, tending to be ahead of rear ring margins, produced into acute points, especially toward rear. Lateral seta 32µ long, on ring 10 behind shield; first ventral seta 55µ long, on ring 24; second ventral 24µ long, on ring 41. Telosome with 7 rings, entirely microtuberculate, the microtubercles pointed, especially dorsally; telosomal seta 13µ long. Accessory seta minute. Female genitalia 12µ long, 17µ wide; coverflap with basal coarse granulations, apically with about 10 irregular longitudinal ribs. Genital seta 12µ long.

Male with about same body dimensions as female.

Type locality: Gila bend, Arizona

Collected: June 12, 1969, by G. Ware and F. Werner

Host: *Suaeda torreyana* Wats., seep weed

Relation to host: the mites make swollen leaf blisters in the linear leaves

Type material: a type slide, sent to Dr. D. M. Tuttle, Yuma Ariz.
a paratype slide, sent to Entomology Research Division, USDA
Three paratype slides and dry material retained.

Aceria tenuis (Nal.), 1891, Anz. Ak. Wiss. 27:212

This was the principal grass mite listed by Halepa. He always gave it as having a 5-rayed featherclaw and that it lived on various grasses. The original hosts were grasses in the genera *Avena* and *Bromus*. In his final host list he added grasses in the genera *Agropyron* and *Aira*. Halepa, in his original treatment stated he had found no males.

European grass mites are on hand from East Germany (sent by Dr. G. Proeseler), from Poland (sent by Dr. Jan Boczek), from Yugoslavia (sent by Dr. Melisa Tosich), from Bulgaria, and from Iran. The specimens in these lots consistently have 6-rayed featherclaws except the Yugoslavia examples from wheat, which have 8-rayed featherclaws. These populations tend to be segregated according to the featherclaw rays, with males having one less ray than the females in each case. (In North America, *tulipae*, which belongs to this series, has a 7-rayed featherclaw on females and 6 rays on the males.)

To harmonize the European examples with Halepa's consistent statement that the featherclaw rays were 5 it is necessary to assume that he missed one of the rays in his original description, and never verified it.

Specimens with 6-rayed featherclaws, here assigned to *tenuis*, that are from seed heads of *Festuca ovina* L., from East Germany, are of particular interest. The males have 5-rayed featherclaws, but there are two kinds of females present. All of the examples in these seed heads have the same shield pattern and the same pointed microtubercles, but one type of female, which is

Aceria tenuis continued on page 7

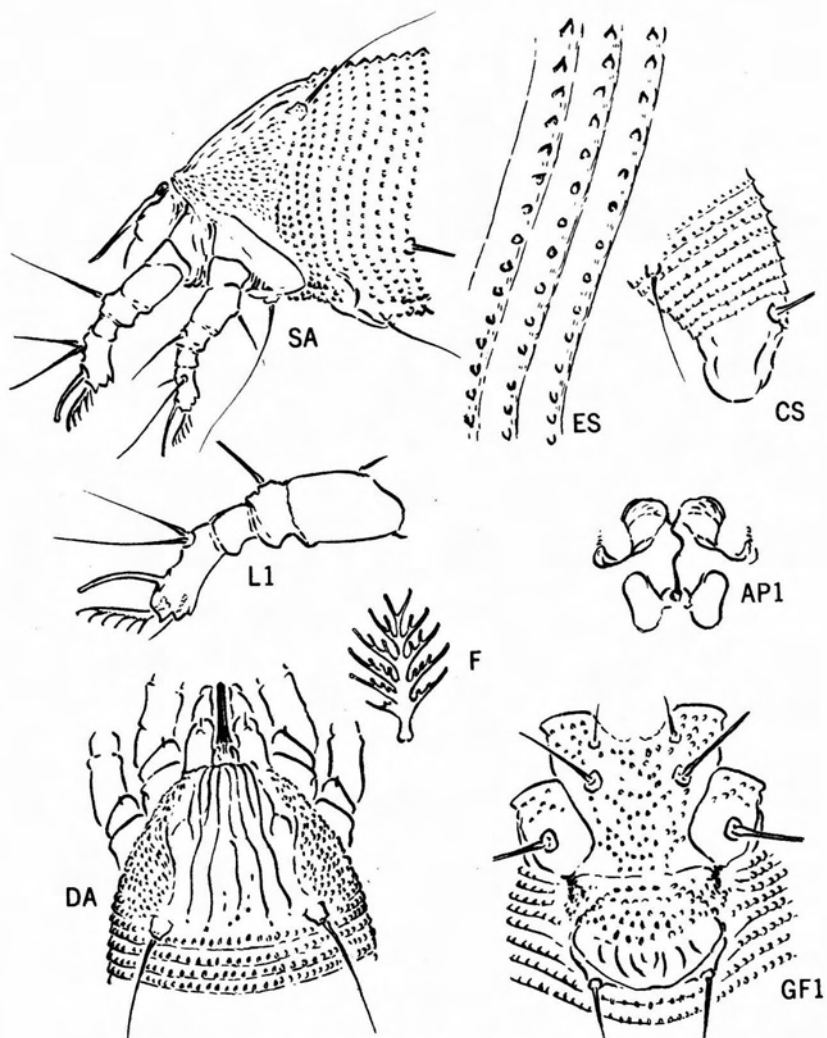


Plate 3 - *Acalitus gilae*, new species

Acalitus inulaefolii, new species

Plate 4

This new species is a typical example of the genus *Acalitus*, with granular coxae. The forecoxae are fused, and fused with the suboral plate. There are no longitudinal ribs on the genital coverflap, and the interior anterior genital apodeme is short. This species has definite longitudinal lines in the center of the shield, and in that respect it differs from the species of *Acalitus* on *Eupatorium adorum* L., which possesses numerous fine longitudinal lines on the shield which obscures the primary shield lines, which lines are plain on *inulaefolii*.

Female up to 220µ long, 36µ thick; wormlike; color light yellowish-white. Rostrum 15µ long, curved down; antapical seta apparently absent. Shield 21µ long by 25µ wide; rather subtriangular in dorsal view, with prominent granular lobes laterally below dorsal tubercles. Median shield line complete, broken. Admedian lines complete, slightly sinuate, curving slightly centrad to rear. First submedian line close to admedian and ending at 1/2. Second submedian just beyond first, sinuate, ending in front of dorsal tubercle where it turns out. Shield laterally with granules and lines of granules; three partial rings below dorsal tubercles. Dorsal tubercles 11µ apart; dorsal setae 17µ long. Foreleg 23µ long, tibia 3µ long, tarsus 7µ long, claw 6µ long, featherclaw 4-rayed. Hindleg 21µ long, tibia 3µ long, tarsus 5µ long, claw 8.5µ long. Coxae generally fused and granular, the granules running up onto suboral plate. The three setiferous coxal tubercles forming an obtuse angle toward the front. Phnosome with about 73 rings, some reduction to venter. Microtubercles rounded off, generally beadlike; somewhat elongate just behind shield, the dorsal microtubercles often touching ring margins; laterally and ventrally the microtubercles more beadlike and ahead of margins. Lateral seta 12µ long, on ring 9 behind shield; first ventral seta 31µ long, on ring 23; second ventral seta 10µ long, on ring 45. Telosome with 5-6 rings, the microtubercles much thinner and pointed over margins; seta 13µ long. Accessory seta absent. Female genitalia 11µ long, 17µ wide; coverflap basally with coarse granules in two transverse curving rows; seta 6µ long.

Male not seen.

Type locality: St. Augustine, Trinidad, West Indies

Collected: April 3, 1970, by Rachel Crutwell

Host: *Eupatorium inulaefolium* HBK. (Compositae) Eupatory

Relation to host: the mites make small undersurface tufts of erineum on the leaves. These tufts are of tangled filaments and papillae, with conspicuous granular inclusions. These erineum tufts differ from most erineum by being localized. Most erineum patches behave as if the engendering growth director is able to travel laterally through the cells and produce extensive patches of hair or papillae.

Type material: type slide, so designated, with the above data
Three paratype slides, one of which is sent to the Entomology Research Division, USDA, Beltsville, Maryland
There is also an envelope of dry leaves from which examples of the mites used in this description came.

Aceria tenuis continued from page 5

larger and bulkier, is 250µ long by 80µ thick, and the other is 160µ long, and 40µ thick. The larger form contains eggs in various stages of development and in two cases on the slides there are internal first nymphs. One female has one nymph inside, the other has two nymphs and a third is just outside in a membrane, as if forced out by the preparatory procedure.

The smaller females have no inclusions. The conclusion concerning the presence of these two female forms is that the larger one is the 'resident' type in the soon to be abandoned seed heads, and the smaller is the migratory form. No such change in female form has been reported for *Aceria tulipae* in North America. Somsen, 1966, Jr. Ec. Ent. 59:1283, reports finding a larger type of *tulipae* on maturing wheat, that is more active and that he observed trying to move from the plant where it was. He concluded that this larger form of *tulipae* was the migratory phase. On the basis of these two observations it is here assumed that *tenuis*, at least on *Festuca*, has migratory females that are smaller than resident forms, whereas *tulipae* has larger migratory females.

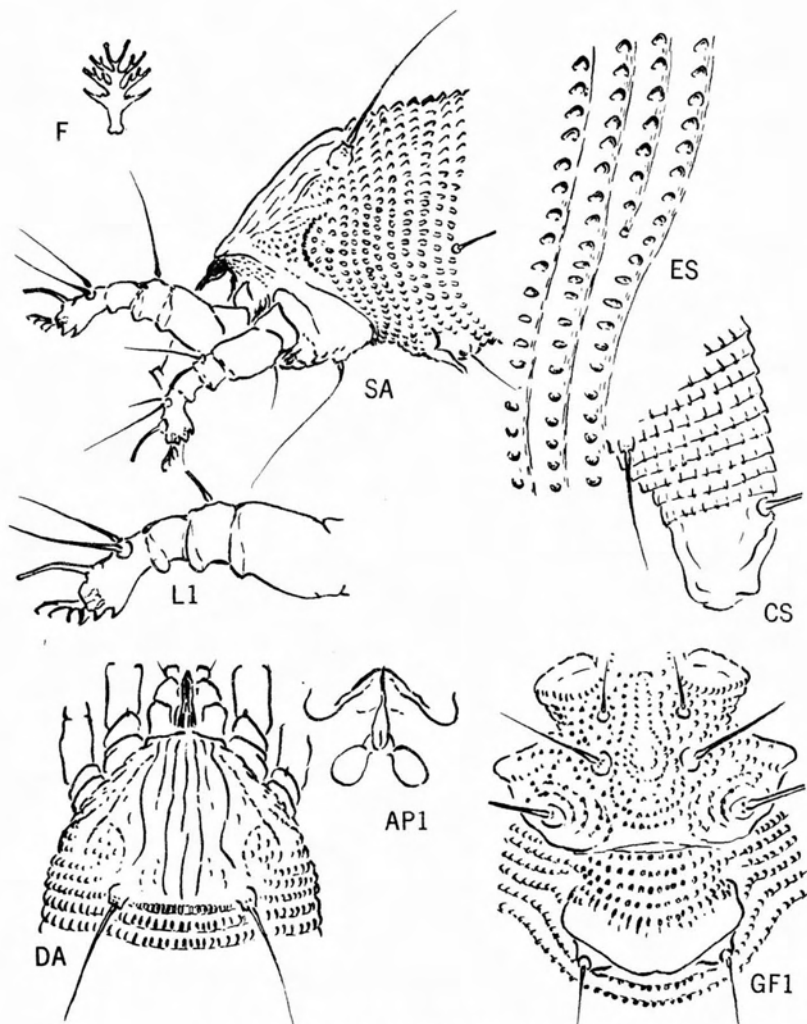


Plate 4 - *Acalitus inulaefoliae*, new species

Aceria baccharipha, new species

Plate 5

This new species differs from *Aceria calibaccharis* (K.) not only by having one more featherclaw ray, but also by the way it attacks its host. *Calibaccharis* is a bud mite, not known to cause leaf blisters.

Female wormlike, 165 μ -215 μ long, about 40 μ -45 μ thick, color in life probably light yellowish-white. Rostrum 21 μ long, curved down; antapical seta 6 μ long. Shield 37 μ long, 30 μ wide; outline describing half an ellipse; small emarginate, narrow-based anterior lobe over rostrum base. Shield design: median line on rear 1/2, more or less broken, ending in irregular dart-shaped mark; admedians complete, sinuate, flaring out ahead of rear margin and partly recurved inside dorsal tubercles; submedian lines a forking series of granular lines, ending in front of dorsal tubercle. Shield laterally with longitudinal lines of granules and granular band above coxae. Four partial rings on side below dorsal tubercle. Dorsal tubercles 16 μ apart; dorsal setae 44 μ long. Foreleg 32 μ long; tibia 8 μ long, with 7 μ seta from 1/4; tarsus 6 μ long; claw 7 μ long; featherclaw 6-rayed. Hindleg 29 μ long, tibia 7 μ long, tarsus 5-1/2 μ long, claw 7 μ long. Coxae with coarse granules; first setiferous coxal tubercles not as far ahead on coxae as anterior fork of sternal line; second coxal tubercles ahead of line across third tubercles. Thanosome with 59 to 77 rings; microtubercles with small point, the microtubercles usually ahead of ring margins. Lateral seta 21 μ long, on ring 9; first ventral seta 18 μ long, on ring 19 to 25; second ventral seta 5 μ long, on ring 33 to 38. Telosome with 6 rings, the microtubercles fainter than on thanosome and pointed over ring margins. Accessory seta 6 μ long. Female genitalia 18 μ wide, 10 μ long; coverflap with about 10-12 longitudinal ribs; seta 7 μ long.

Male not seen.

First nymph with dorsal setae set ahead of rear shield margin and pointing forward; 3 to 4 rings end on lateral sides of confused granular area just behind shield; about 7 rings on venter ahead of genital setae.

Type locality: Mandeville Canyon, West Los Angeles

Collected: April 1, 1970 by D. Williams, and bearing Cal. Dept. Agr. number 70D6-46

Host: *Baccharis pilularis consanguinea* (DC.) chaparral broom

Relation to host: the mites make blisters in the leaves

Type material: a type slide, so designated, with the above data
five paratype slides, one sent to Entomology Research Div.
USDA, Beltsville, Maryland

Artacris, new genus

Body of moderate length compared to thickness; wormlike; abdomen with narrow rings subequal dorsoventrally. Shield with narrow basally hinged anterior projection over rostrum approximately 1/5 length of main part of shield; dorsal tubercles on rear margin directing setae to rear. Rostrum of moderate size; short form oral stylet. Shield subtriangular in dorsal view. (Anterior shield projection with blunt end on genotype; another species with acute projection.) Coxae with standard seta number; legs with standard setae including foretibial seta. Abdominal rings with microtubercles evenly distributed except for specific differences on dorsal rear. (Genotype with no dorsal microtubercles on dorsum of rear thanosomal rings, and on telosome, this area with slight middorsal ridge.) Thanosome with all standard setae; telosomal seta present. Female genitalia a moderate distance behind coxae; internal anterior apodeme of moderate length.

Genotype - *Aculus antoninus* K., 1962, now quoted as *Artacris antoninus* (K.), and transferred to the Eriophyinae. (See Fig. 1, shield of *antoninus*.) The genotype is a bud mite on *Acer negundo californicum* (Torr. & Gray). The narrow anterior shield projection contrasts with Phyllocoptine shield lobes which are broad-based and mostly rigid. As seen from the figure the anterior shield projection on *antoninus* is rounded off, and in that respect not quite as good an example of this sharp anterior projection as on Malepa's *macrorhynchus*. The genus name is: *art* - narrow; *acris* - pointed.

For figures of *Artacris* shields see page 21 *Artacris* continued on page 11

Artacris references on page 13

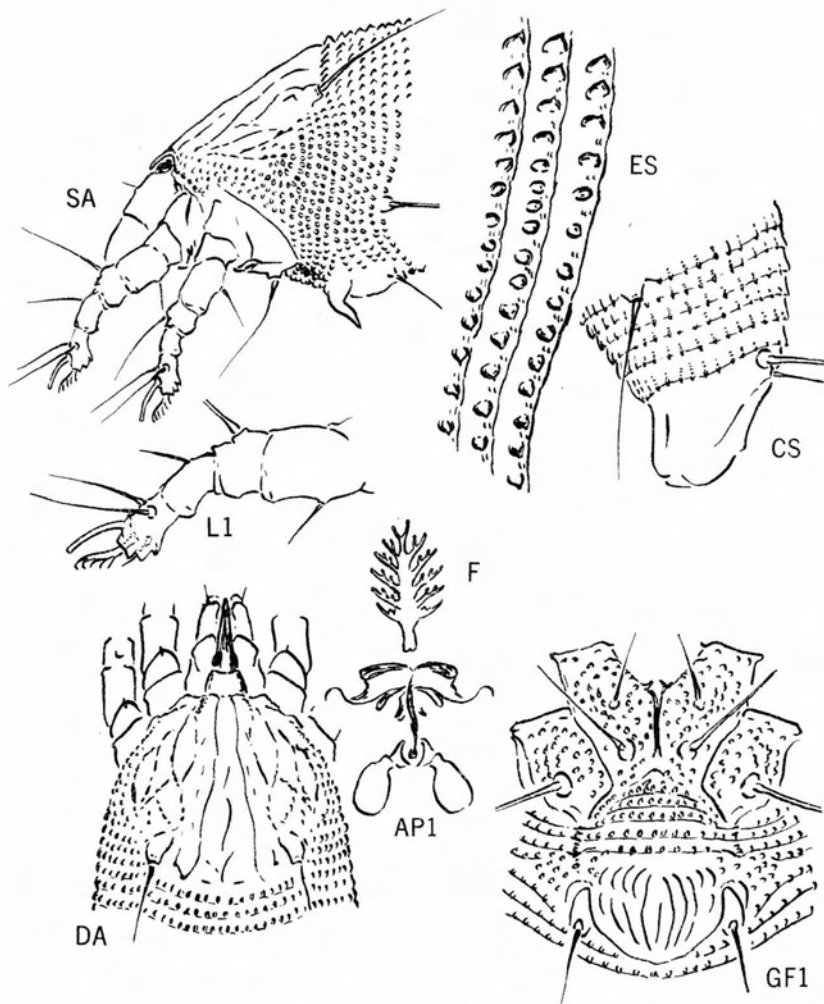


Plate 5 - *Aceria baccharipha*, new species

Aceria elacanthi, new species

Plate 6

The new species resembles some of the *Acerias* that infest Composites, by possessing 4-rayed featherclaws, pointed microtubercles, and fairly large genital setiferous tubercles. *Aceria heterothecae* (K.) is the principal example of a Composite infesting Eriophyid, for this comparison. The new mite on this malva differs by not having definite submedian shield lines, and more granular coxae. One female of the new species has a first nymph in the oviduct and an eggshell. The nymph is toward the rear and pointed backwards.

Female 225 μ -240 μ long, 50 μ -55 μ thick; wormlike; color light yellowish-white. Rostrum 22 μ long, projecting ahead and down; antapical seta 5 μ long. Shield 29 μ long by 40 μ wide; subsemicircular in anterior outline, a slight extension over chelicera base. Median line substantially complete, broken, partly granular. Admedian lines complete, subparallel to median, sinuate, more widely separate on rear 1/2 and slightly recurved toward center ahead of rear margin. Submedian lines and lateral shield areas consisting of confused short lines and granules; about three partial rings below dorsal tubercles. Dorsal tubercles 15 μ apart; dorsal setae 55 μ long, projecting divergently to rear. First leg 32 μ long; tibia 6 μ long, with seta from about 1/4 6 μ long; tarsus 9 μ long; claw 8.5 μ long; featherclaw 4-rayed. Hind leg 27 μ long, tibia 5 μ long, tarsus 7.5 μ long, claw 10 μ long. Coxae generally granular and with lines curved around inside of second setiferous tubercles; anterior coxae broadly connate, the sternal line reaching just past second tubercles; first setiferous coxal tubercles slightly farther ahead than anterior end of sternal line; second tubercles farther ahead than third. Abdominal thansosome with about 67 rings, completely microtuberculate, the microtubercles pointed, less so just behind shield; these microtubercles ahead of ring margins on well expanded examples. Dorsally microtubercles pointed over ring margins on last 12-14 rings. Lateral seta 34 μ long, on ring 8; first ventral seta 55 μ long, on ring 20; second ventral 9 μ long, on ring 30. Telosome with 8 rings; microtubercles pointed over ring margins and small, more elongate only on last two rings; seta 27 μ long. Accessory seta 5.5 μ long. Female genitalia 15 μ long by 21 μ wide; about 10 longitudinal ribs on coverflap; genital tubercles fairly large; seta 14 μ long.

Male 155 μ -165 μ long, 40 μ -45 μ thick; microtubercles about same as on female; genital seta 13 μ long.

First nymph with dorsal setae pointing up and forward.

Type locality: La Habra, Orange County, California

Collected: Feb. 17, 1970, by D. H. Byers of the Orange County Agricultural Commissioner's Office

Host: *Malva parviflora* L. (Malvaceae) cheese weed

Relation to host: the mites live in leaf hairs, apparently doing no damage. Cheese weed is an annual but as the southern climate allows the plant to grow at almost any time of year the mite is continually able to find a growing host.

Type material: a type slide, so designated, with the above data and bearing California Department of Agricultural #70C2-11 seven paratype slides as above. One paratype sent to the Entomology Research Division, USDA, Beltsville, Maryland

Artacris continued from page 9

A second species assigned to *Artacris* is listed in Nalepa's 1929 host list as *Eriophyes macrorhynchus typicus* Hal. It makes slightly elongate leaf galls on *Acer pseudoplatanus* L. Here quoted as *Artacris macrorhynchus* (Hal.) it has a sharply pointed anterior shield projection over the rostrum. (See Fig. 2 for shield of *macrorhynchus*.)

A third species, which Nalepa listed as *Eriophyes macrorhynchus cephalonicus* Hal. is here quoted as *Artacris cephalonicus* (Hal.) (See Fig. 3 for shield of *cephalonicus*.) It makes numerous tiny bead galls on *Acer pseudoplatanus* L. and has a blunter, more rounded anterior shield lobe than *antoniinus*. It further resembles *antoniinus* more closely than *macrorhynchus* does by lacking some microtubercles on the dorsal rear. This *cephalonicus* cannot be the same species as *macrorhynchus* and have an entirely differently shaped anterior shield projection.

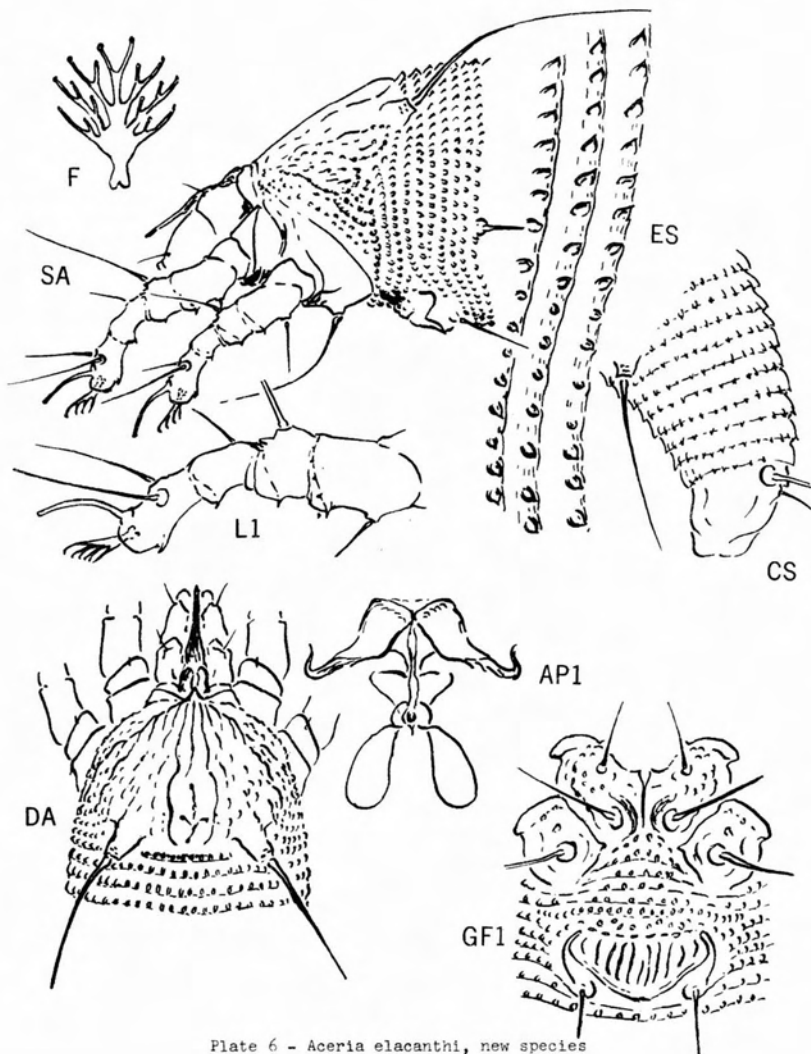


Plate 6 - *Aceria elacanthi*, new species

Eriophyes holodisci, new species

Plate 7

The distinguishing characters of this mite are coarse shield granules, some of which are on longitudinal lines, appressed female genitalia, with ribs in two ranks, and shortened interior apodeme. The genital structures ally the new species to *Eriophyes vitis* (Pgst.), and both *holodisci* and *vitis* have the first setiferous coxal tubercles pushed ahead of the front end of the anterior coxal approximation. *Vitis* however, has much heavier lines on the forecoxae, an ocellar spot on the shield side, and more lines on the female genital coverflap. *Holodisci* has females with two types of microtubercles. The one depicted resembles the male, with microtubercles reaching ring margins and more elongate dorsally. The other female, presumably the deutogyne, has more sparse, rounder microtubercles that are ahead of ring margins on well expanded examples.

Female 160 μ -170 μ long, 38 μ thick; wormlike; color light yellowish-white. Rostrum 13 μ long, projecting ahead and somewhat down; antapical seta either minute or absent. Shield 25 μ long, 30 μ wide, anterior half subsemicircular in dorsal view and slightly acute. Median shield line about complete but granular and broken. Admedian lines close to median, slightly diverging to rear, sinuate, granular or broken. Submedian shield lines as coarse granules, which granules extend down onto shield sides; two or three partial rings below dorsal tubercles. Dorsal shield tubercles 14 μ apart; dorsal setae 12 μ -16 μ long, projecting up and ahead. Foreleg 23 μ long; tibia 4 μ long, with 4 μ seta at 2/5; tarsus 6 μ long; claw 7 μ -9 μ long; featherclaw 5-rayed. Hindleg 20 μ long, tibia 3 μ long, tarsus 4.5 μ long, claw 7 μ -8 μ long. Coxae with only slight lines, sternal line very short, centrally located; first setiferous coxal tubercles ahead of anterior forecoxal approximation and ahead of second tubercles, second tubercles well ahead of third tubercles. Thanosome with about 42 rings, generally microtuberculate, the microtubercles reaching ring margins more elongate dorsally, more bead-like laterally and ventrally. Lateral seta 14 μ long, on ring 5; first ventral seta 30 μ long, on ring 15; second ventral 8 μ long, on ring 27. Telosome with 6 rings, microtubercles generally weaker than on thanosome and faint dorsally; seta 8 μ -12 μ long. Accessory seta absent. Female genitalia 10 μ long, 29 μ wide, appressed to coxae, with interior anterior apodeme shortened in ventral view; about 10 longitudinal ribs divided horizontally into two separate ranks; seta 2 μ long.

Type locality: Twin Lakes, Alpine County, California

Collected: August 3, 1955, by the writer

Host: *Holodiscus microphyllus* Rydb. (Rosaceae) cream bush

Relation to host: the mites make yellowish erineum on both leaf surfaces.
This erineum is of simple hairs.

Type material: a type slide, so designated, with the above data
three paratype slides, with the above data, one sent to the
Entomology Research Div., USDA, Beltsville, Maryland
an envelope of dry material from which the specimens came.

Artacris references

Nalepa, Marcellia 25:119-120, 1929, host list
Keifer, Eriophyid Studies (Cal. Dept. Agr.)
B-7:2, 1962 antoninus

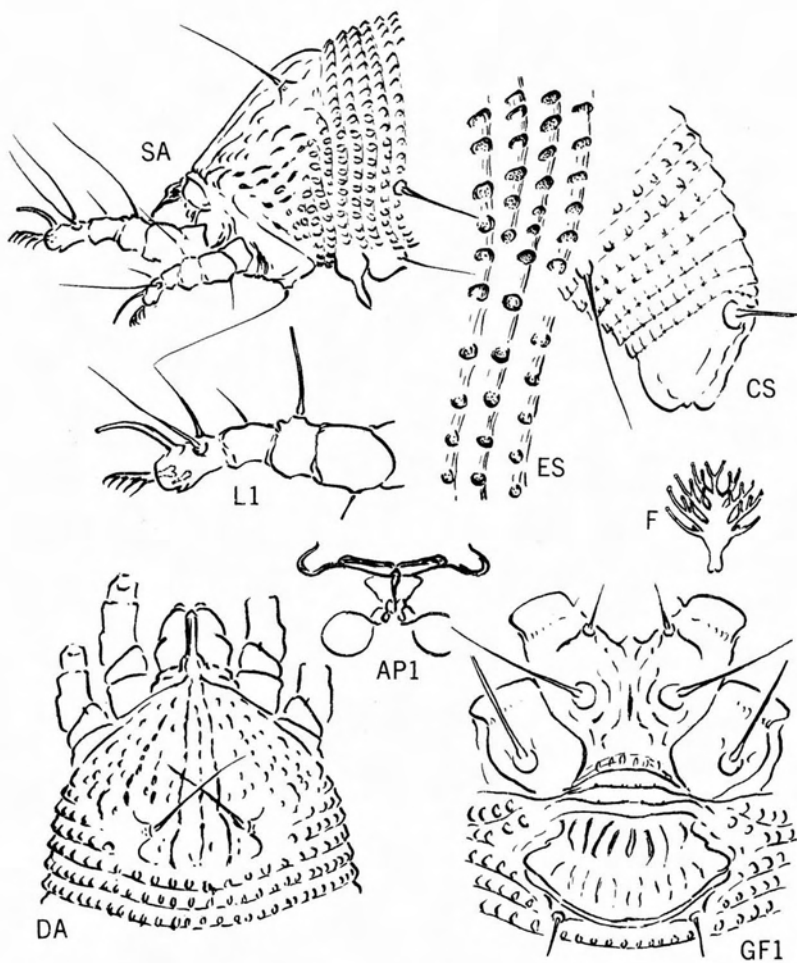


Plate 7 - *Eriophyes holodisci*, new species

Stenacis, new genus

Body elongate-wormlike; abdomen with narrow rings subequal dorsoventrally; shield with narrow, basally hinged, anterior projection over rostrum, either apically blunt or emarginate, or acute; dorsal tubercles set a little ahead of rear margin, directing dorsal setae up and divergently ahead. Rostrum moderately large; short formoral stylet. Shield subsemicircular in anterior outline. Coxae with all three pair of standard setae; legs with all standard setae, including foretibial seta. Abdominal rings entirely microtuberculate, the microtubercles round or somewhat elongate. Thanosome with all three pairs of standard setae. Telosome with regular rings and setae. Female genitalia a moderate distance behind rear coxae; internal anterior apodeme of moderate length. First and second nymphs with no anterior shield projection. First three rings normally behind shield giving way dorsally to area with random granulation on first nymph.

Genotype - *Stenacis palomaris*, new species, a willow mite. The genus name is: *sten* - narrow; *acis* - point. The genus is assigned to the Eriophyinae.

A second species referable to *Stenacis* is *triradiatus* Nal., also a willow mite. *Triradiatus* differs from *palomaris* by the anterior projection being acute (it is blunt and bilobed or emarginate on *palomaris*) and by the definite longitudinal central lines on the shield. Maleps always quoted this second species as *Eriophyes triradiatus* (Nal.), and so did the writer, ignoring the narrow anterior shield projection. Gisela Rack, 1958, is the first to use this anterior projection taxonomically, referring *triradiatus* to *Phyllocoptes* on the strength of it. But the hinged, narrow-based front shield projection is incongruous in a genus of rust mites. Both the new species and *triradiatus* have 3-rayed featherclaws with terminal stem unusually long.

A third species assigned to *Stenacis* is *calisalicis* K., a mite from buds of weeping willow. *Calisalicis* differs by having indistinct lines on the shield center. It also has a 3-rayed featherclaw.

A fourth species, here described as *Stenacis anysis* new species, is atypical in this genus since it has appressed genitalia and shortened internal apodeme. In respect to the genital and coxal characters *anysis* n. sp. resembles *Eriophyes vitis* (Pgst.), but *vitis* has no narrow anterior shield projection.

Stenacis palomaris, new species

Plate 8

Female about 150 μ -172 μ long, 35 μ -42 μ thick; color light yellowish white, with orange brown infusions in older individuals. Rostrum rather large, down-curved, 34 μ long; antapical seta 5.5 μ long. Shield semicircular in anterior outline. Narrow anterior shield lobe 15 μ long, apically bilobed or emarginate. Shield design of scattered granules, lines hardly indicated. Granules extended down sides of shield to above coxae. Shield behind rostrum 28 μ long, 30 μ wide; dorsal tubercles 18 μ apart, set a little ahead of rear margin; dorsal setae 20 μ -24 μ long. Foreleg 33 μ long; tibia 8 μ long, with 6 μ seta from 1/4; tarsus 7.5 μ long; claw 7.5 μ long; featherclaw 3-rayed. Hindleg 30 μ long, tibia 6 μ long, tarsus 7 μ long, claw 9 μ long. Coxae heavily granular, anterior coxae rather broad; first setiferous coxal tubercles ahead of second and not quite as far forward as anterior end of sternal line; second coxal tubercles farther forward than third tubercles. Abdominal thanosome with about 54 rings, microtubercles rounded off; microtubercles elongate-elliptical dorsally, reaching ring margins, but laterally and ventrally ahead of margins and more bead-like. Telosome with 5 rings, microtubercles finer and more linear than those on thanosome, pointed on ring margins; telosomal seta 21 μ long. Accessory seta 2 μ long. Female genitalia 19 μ wide, 14 μ long; with 12-14 generally longitudinal ribs; seta 22 μ long.

Male 125 μ -155 μ long, 38 μ thick; microtubercles a little sparser than on female. Nymphs with microtubercles a little more sparse than on female; featherclaw 3-rayed; 7 to 9 rings between second coxae and genital tubercles.

Type locality: top of Palomar Mountain, San Diego County, Cal.

Collected: Jan. 13, 1970, by K. F. Sims, San Diego County Dept. of Agr.

A second collection from this same place by Sims is dated Aug. 3, 1970

Host: *Salix lasiolepis* Benth. (Salicaceae) arroyo or pussy willow

Relation to host: the mites live around buds and at petiole bases, and especially on appressed leaves on gall midge rosettes.

Type material: a type slide, so designated, with the Aug. 3 date.

five paratypes, three Jan. 13; two Aug. 3

One paratype sent to the Entomology Research Division, USDA, Beltsville, Maryland.

Reference - Gisela Rack, Mitt. Hamburg Zool. Mus. Inst.. 56:41, 1958

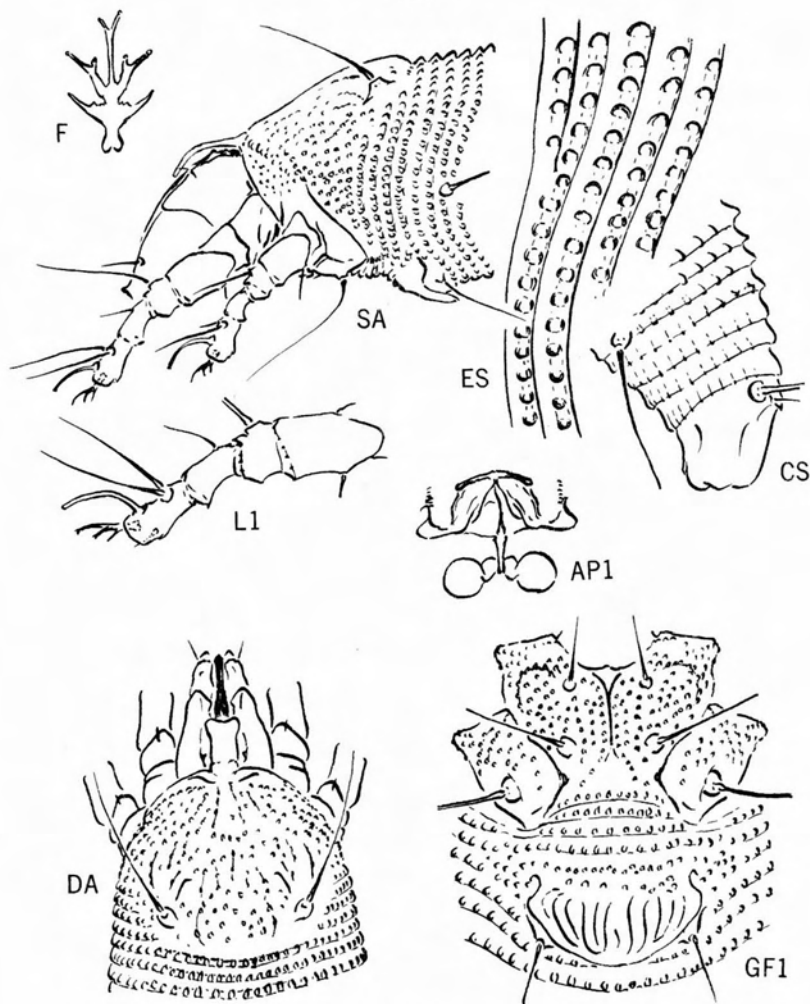


Plate 8 - *Stenacis palomaris*, new species

Stenacis anysis, new species

Plate 9

This gallmite is associated with *Stenacis palomaris* due to the forward direction of the dorsal setae, and to the anterior shield projection, which is narrow and has a flexible base. Otherwise *anysis* is rather different from *palomaris* in a number of respects. The new species has a 5-rayed featherclaw as opposed to the 3-rayed structures on *palomaris* and *triradiatus*. In addition the new species has appressed genitalia with consequent shortening of the internal female apodeme. *Stenacis anysis* resembles *Triophyes vitis* (Fest.) in the following ways: numerous longitudinal lines on the shield, and lateral ocellar-like lobes below the dorsal tubercles; forecoxal lines partially enclosing the setiferous tubercles; appressed genitalia with consequent apodeme shortening. These features are different from *palomaris*. A character shared by all species referred to *Stenacis* is the direction of the dorsal setae.

Female 140 μ -150 μ long, 40 μ -45 μ thick; body robust wormlike; color light yellowish-white. Rostrum 18 μ long, projecting obliquely down; antapical seta 2 μ long. Shield 25 μ long, 33 μ wide, subsemicircular in anterior outline; with narrow, hinged, anterior shield projection over rostrum about 10 μ long. General shield pattern of fine longitudinal lines; median and admedian lines about complete, broken; first and second submedians close to admedian, broken, ending in front of dorsal tubercle; numerous more or less short longitudinal lines on upper side of shield. Laterally the shield with short curved lines above the coxae and with lateral partially distinct ocellar spot, or two. Dorsal tubercles near rear shield margin, 11 μ apart, directing the 12.5 μ setae ahead and laterally. Foreleg 24 μ long; tibia 4.5 μ long, with 4 μ seta from 1/3; tarsus 7 μ long; claw 5.5 μ long; featherclaw 5-rayed. Hindleg 22 μ long, tibia 3.2 μ long, tarsus 6 μ long, claw 8 μ long. Coxae with moderately long sternal line which is forked to rear; forecoxae with curved lines more or less surrounding setiferous tubercle; setiferous coxal tubercles forming inwardly obtuse angle to front. Thanosome with about 45 rings, the microtubercles rounded off; dorsally and laterally the microtubercles rather elongate; rounder and more beadlike ventrally. Dorsally the microtubercles touching ring margins, ahead of margins ventrally. Microtubercles absent from last 8 or 9 thanosomal rings dorsally, weak ventrally. Lateral seta 15 μ -21 μ long, on ring 7 behind shield; first ventral seta 37 μ -43 μ long, on ring 16; second ventral 35 μ -40 μ long, on ring 28. Telosome with five rings, the microtubercles absent from dorsum of anterior four, weak ventrally and on last ring. Telosomal seta 17 μ long. Accessory seta absent. Female genitalia 11 μ long, 17 μ wide; coverflap with 15-16 longitudinal ribs, more or less broken centrally; seta 12 μ long.

Male not seen.

Type locality: Rockhampton, Queensland

Collected: October 15, 1969 by E. F. Tree

Host: *Terminalia muelleri* Benth. (Combretaceae)

Relation to host: the mites make galls on the leaves

Type material: type slide, so designated, with the above data

four paratype slides with above data

one paratype sent to Department of Primary Industries,

Nambour, Queensland

one paratype slide to the Entomology Research Division,

USDA, Beltsville, Maryland

a bottle of leaves with mites in liquid, from which the above described specimens came.

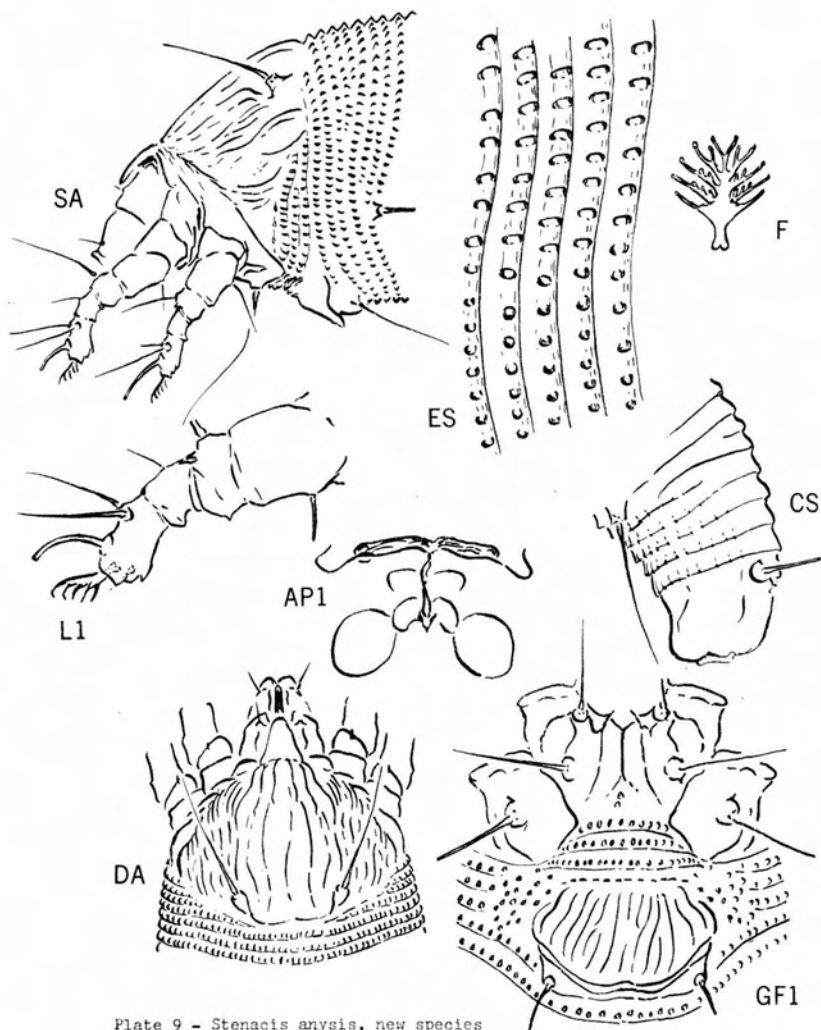


Plate 9 - *Stenacis anysis*, new species

Rhombacis rheumella, new species

Plate 10

While it is not a very impressive character, the general body shape of *Rhombacis* now seems the best means of defining the genus and assigning species to it. Previously it has been possible to define the genus by the inversely curved second leg claws. But the species here described has normal claws on the second legs. The genotype is *morrisi* K., described in Eriophyid Studies B-14: 15, 1965, from a native Australian Eucalyptus. Next, the species *asclepiadii* K. named in Eriophyid Studies C-2:9, 1969, was from a milkweed imported into Australia. The new species, *rheumella*, lives on rhubarb in Australia, the host again being imported. These three species have the uneven rhombic body shape in common, the dorsal shield tubercles are short and well ahead of rear shield margin, and there is a broad dorsal trough extending most of the thanosome.

Female 180 μ -195 μ long, about 80 μ across rear of shield, and about 45 μ thick. Rostrum 26 μ long, projecting down; antapical seta 10 μ long. Shield 54 μ long, 75 μ -80 μ wide at rear, triangular in dorsal view. Anterior shield lobe rounded off with points just underneath. No particular shield design, a curved line extending diagonally laterally from dorsal tubercles, and somewhat of a line just inward of dorsal tubercles. Lateral shield margin more or less granular, especially around rear lobe; a band of granules above rear coxae. Dorsal tubercles ahead of rear margin and 24 μ apart, directing the 6 μ seta up and anteriorly in. Foreleg 38 μ long; tibia 12 μ long, with 5 μ seta from just before end; tarsus 7 μ long; claw 6.5 μ long, somewhat curved down; featherclaw 5-rayed. Hindleg 31 μ long, tibia 8 μ long, tarsus 6 μ long; claw normal, 7 μ long, curved down. Coxae with some curved lines, anterior coxae without visible sternal line between; first setiferous coxal tubercles farther apart than second and about even with anterior end of anterior coxal approximation; second tubercles not much farther ahead than third. Abdominal thanosome with about 15 tergites and 51 sternites. Longitudinal tergal trough not wide, flanked on each side by low ridge, starting about third tergite and ending just before telosome. Tergites having microtubercles laterally only, and these elongate, uneven. Microtubercles on sternites beadlike laterally, on sternite margins, midventrally more elongate and becoming increasingly elongate, merging into telosome to rear. Lateral seta 26 μ long, on sternite 5; first ventral seta 65 μ long, on sternite 20; second ventral seta 20 μ long, on sternite 36. Telosome with 6 rings; microtubercles faint or absent dorsally but elongate ventrally; seta 31 μ long. Accessory seta absent. Female genitalia 19 μ long, 25 μ wide; basally with slight longitudinal lines the coverflap with about 12 longitudinal ribs diagonally centrad to rear, uneven; seta 36 μ long.

Male 150 μ -160 μ long, very similar to female.

Type locality: Inglewood, Queensland

Collected: Feb. 3, 1969 by P. D. Rossiter, and sent by A. R. Brimblecombe
Deputy Government Entomologist, Dept. Primary Industries

Host: *Rheum raphanifolium* L. (Polygonaceae) rhubarb

Relation to host: probably a rust mite

Type material: a type slide, so designated, with the above data
three paratype slides, with the above data
One paratype slide sent to Entomology Research Div., USDA,
Beltsville, Maryland; one sent to A. R. Brimblecombe

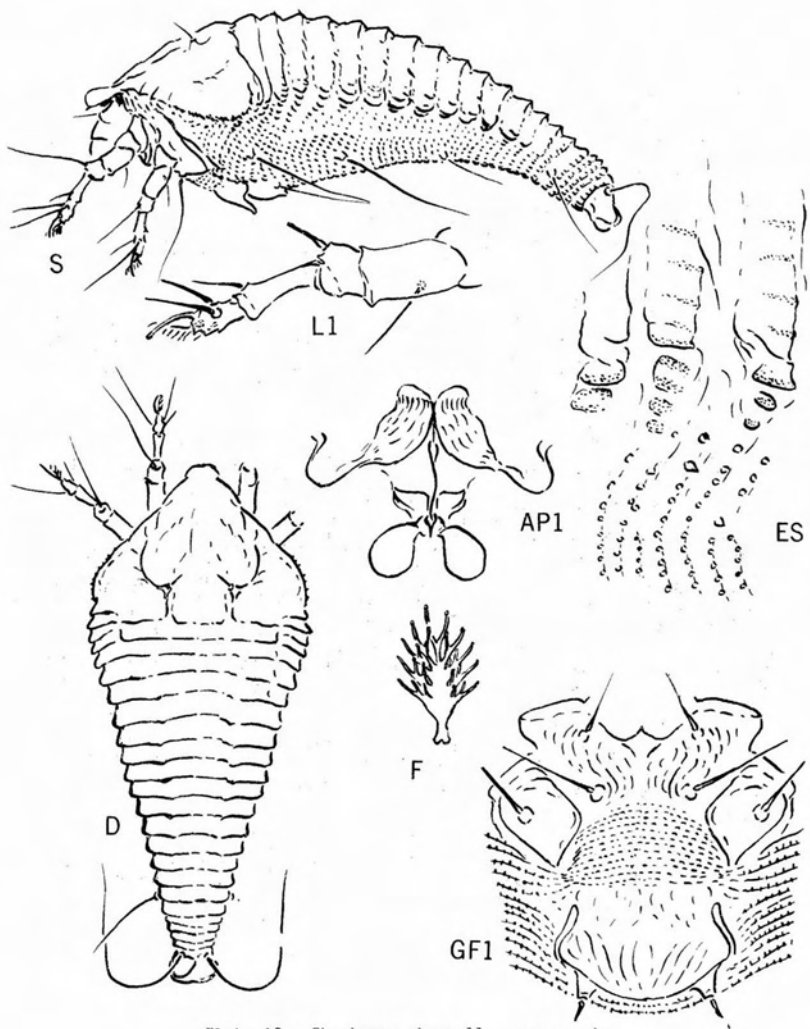


Plate 10 - *Rhombacus rheumella*, new species

Notostrix jamaicae, new species

Plate 11

The genotype, *attenuata* K., Eriophyid Studies (Cal.Dept.Agr.) B-9: 1963, has the same attenuate body as the new species, and also a 7-rayed featherclaw. The new species differs by possessing a pair of points on the apex of the anterior shield lobe, shorter dorsal setae, granular ornamentation on coxae, and less involved rib pattern on female genital coverflap. Both species lack the hind patellar seta.

Female 215 μ -230 μ long, 43 μ wide, 40 μ thick; very elongate and narrow; color light yellowish-white. Shield 58 μ long, 44 μ wide, elongate-triangular, anterior lobe somewhat concave laterally, attenuate. A pair of small points on termen of anterior lobe. Shield design absent centrally; laterally an upper sinuate longitudinal line running from lobe base back to below dorsal tubercles and curving somewhat centrad at end; band of granules over rear coxae. Dorsal tubercles 18 μ apart; dorsal setae 3 μ -4 μ long, projecting up. Foreleg 32 μ long; tibia with points along termen, 6 μ long, with 13 μ seta from 2/3; tarsus 7 μ long; claw 5 μ long; featherclaw 7-rayed, variably divided apically on some examples. Hindleg without patellar seta, with ventral spinules on patella and femur; 31 μ long, tibia 5 μ long, tarsus 13 μ long, claw 9 μ long. Coxae generally granular; broad, the anterior coxae with divided sternal line between; first setiferous coxal tubercles ahead of second and not quite as far forward as anterior end of sternal line; second coxal tubercles a little farther forward than third. Tergites on thanosome about 29 in number, the broad dorsal trough ending about 7 tergites ahead of telosome; thanosomal sternites 75 in number, set on margins with bead-like granules. Lateral seta 28 μ long, on sternite 7; first ventral seta 45 μ long, on sternite 25; second ventral seta up to 62 μ long, on sternite 44. Telosome with 10 rings, the granules mostly bead-like, but elongate ventrally on last three rings; seta 27 μ long. No accessory seta. About 7 rings between female genitalia and rear angle of hind coxa. Female genitalia 15 μ long, 22 μ wide; coverflap with a basal pattern of short curved lines and about 18 to 20 longitudinal ribs, the two sides somewhat divided and tending to converge to rear.

Male about 180 μ long, 40 μ thick; genital seta 20 μ long.

Type locality: Woodstock, Jamaica

Collected: February 12, 1970 by M. Schuiling, Associate Expert, and sent under the direction of Prof. K. Heinze, Coconut Research Dept.

Host: *Cocos nucifera* L. (Palmaceae) coconut

Relation to host: the mites live in leaf furrows on the underside

Type material: a type slide, so designated, with the above data
three paratype slides, with the above data, one sent to the
Entomology Research Div. USDA, Beltsville, Maryland
a paratype sent to Prof. Heinze

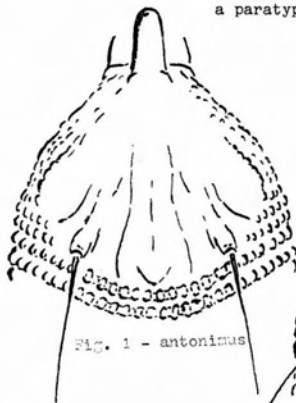


Fig. 1 - *antennatus*

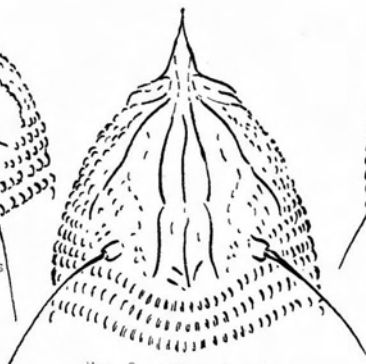


Fig. 2 - *macrorhynchus*

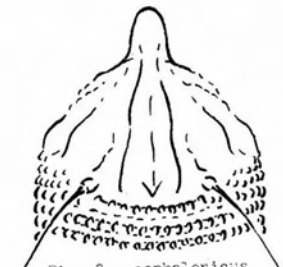


Fig. 3 - *cephalonicus*

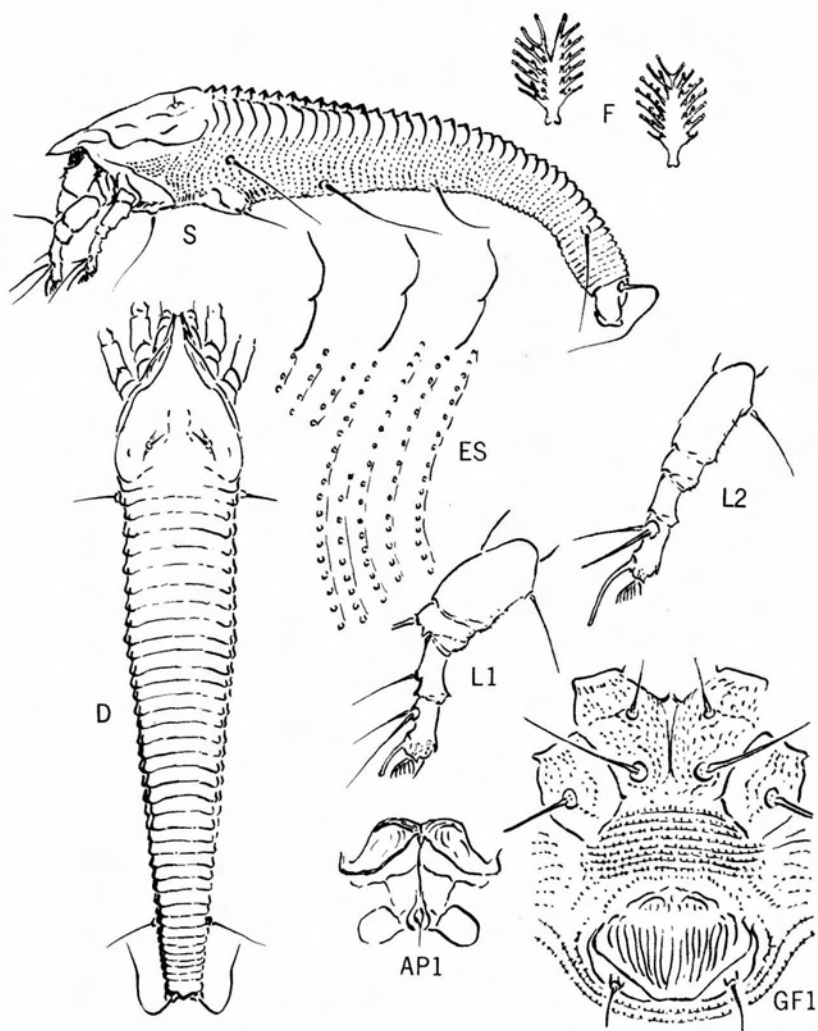


Plate 11 - *Notostrix jamacinae*, new species

Rhyncaphytoptus dichromae, new species

Plate 12

This new species has a 6-rayed featherclaw and a shield pattern of longitudinal lines. Rhyncaphytoptus rubrifoliae K., 1959 (An.Ent.Soc.Am.52(6): 656) has a 7-8 rayed featherclaw and no shield lines. Rubrifoliae lives on Quercus rubra L. in Virginia.

Female 180 μ -190 μ long, about 55 μ thick; elongate-tapering body; color light yellowish-white. Rostrum 46 μ long, projecting down; antapical seta 9 μ long. Shield 36 μ long by 50 μ wide; general shield shape subtriangular, the anterior shield lobe over rostrum short and centrally emarginate. Median shield line complete but weak, with broken cross line ahead of rear margin. Admedian lines complete, gradually diverging from anterior lobe base to about 1/3, flaring out and sinuate to about 4/5 and recurving toward rear margin. First submedian shield line from base of anterior lobe and just outside of admedian, running diagonally outward toward dorsal tubercle and recurving back in front of tubercle and ending just to side of center line. Shield laterally with a line of dots and weak band of granules above coxae. Dorsal tubercles 30 μ apart and pointed diagonally outward and toward front; dorsal setae 22 μ long, extending divergently to front. Foreleg 38 μ long; tibia 10 μ long, with 9 μ seta from 1/5 tarsus 8.5 μ long; claw 9 μ long; featherclaw 7-rayed. Hindleg 36 μ long, tibia 7 μ long, tarsus 9 μ long, claw 9 μ long. Coxae unornamented, anterior coxae narrowly connate and with slight central ridge extending forward onto suboral plate; first and second setiferous coxal tubercles relatively close, the first directly in front; third coxal tubercles well behind line across second tubercles. Thanosome with about 41 tergites, and 70-75 sternites. Last 6-8 tergites-sternites forming complete rings with no ventrad increase. Thanosome completely microtuberculate except dorsum of last few rings, the microtubercles bead-like on ring margins, tending to be pointed laterally. Lateral seta 19 μ long, on sternite 16; first ventral seta 40 μ long, on sternite 33; second ventral seta 10 μ long, on sternite 51. Telosome with 5 rings; microtubercles fading or absent dorsally, small ventrally; seta 28 μ long. Accessory seta 3.5 μ long. Female genitalia 19 μ long, 25 μ wide; coverflap unmarked except for curved cross line; seta 15 μ long.

Male about 170 μ long, microtuberculation and featherclaw number same as on female.

Deutogyne without microtubercles on tergites; suppressed microtubercles on sternites.

Type locality: Columbus, Ohio

Collected: July 5, 1968, by W. B. Sikora, and Tokuo Kono

Host: Quercus bicolor Willd. (Fagaceae) Swamp white oak

Relation to host: the mites are undersurface leaf vagrants

Type material: a type slide, so indicated, with the above data three paratype slides, as above, one sent to the Entomology Research Division, USDA, Beltsville, Maryland dry leaves from which the above described specimens came.

There is also a second envelope of dry leaves from this oak, collected at same locality, June 25, 1970, by T. Kono.

Designations on Plates

- API - Internal female genital structures
- CS - Lateral caudal section of mite
- D - Dorsal diagram of mite
- DA - Dorsal diagram of anterior section
- ES - Lateral skin structures
- F - Empodium or featherclaw F1- on first leg; F2- on second leg
- GPI - External female genitalia and coxae from below
- L1 - Left anterior leg
- L2 - Left second leg
- S - Diagram of side of mite
- SA - Anterior view of side of mite

Telosome - caudal section of mite including third ventral or telosomal seta

Thanosome - abdomen from rear shield margin to telosome

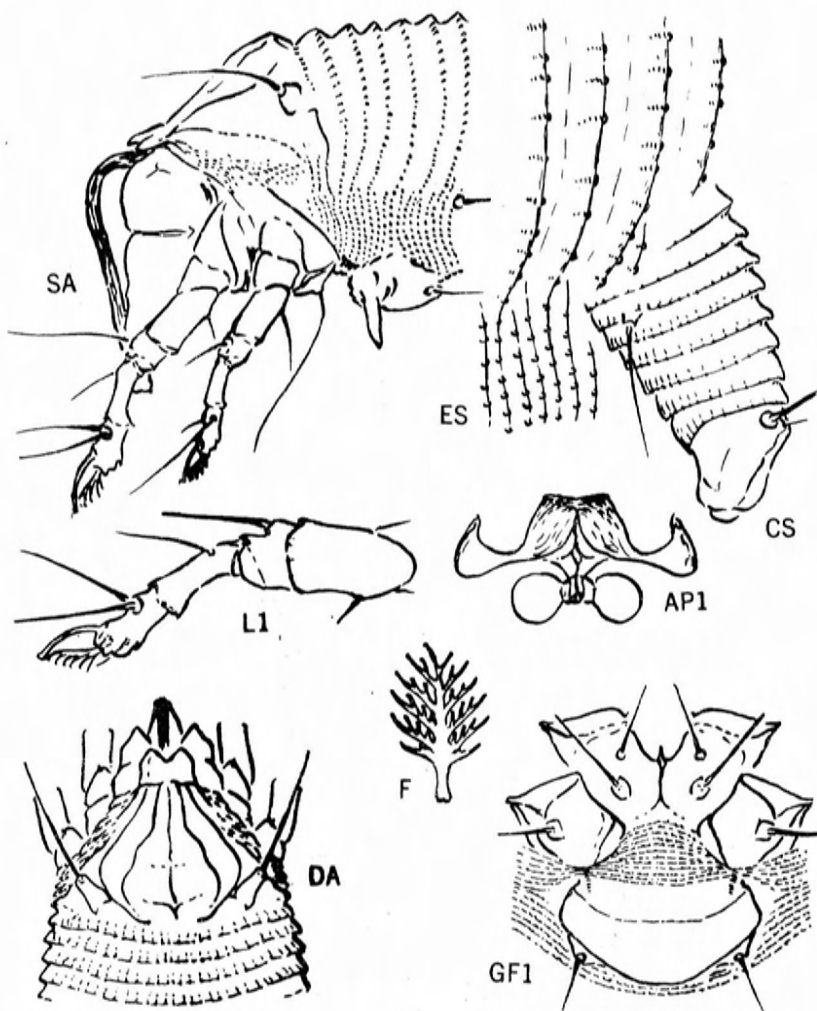


Plate 12 - *Rhyncaphytoptus dichromae*, new species